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TITLE: Broadcast program recording and playing apparatus and  
portable terminal for recording and playing broadcast  
programs

Hon. Commissioner of Patents and Trademarks,  
Washington, D.C. 20231

SIR:

CERTIFIED TRANSLATION

I, Tomomi NISHIKAWA, am an official translator of the Japanese language into the English language and I hereby certify that the attached comprises an accurate translation into English of Japanese Application No. 2000-246795, filed on August 16, 2000.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

24th Nov. 2006  
Date

Tomomi Nishikawa  
Tomomi NISHIKAWA



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- 1 -

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[Name of Document] Drawings 1

[Name of Document] Abstract 1

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- 1 -

[Name of Document] SPECIFICATION

[Title of the Invention] BROADCAST PROGRAM RECORDING AND  
PLAYING APPARATUS AND PORTABLE TERMINAL FOR RECORDING  
AND PLAYING BROADCAST PROGRAMS

[Claims]

[Claim 1] A broadcast program recording and playing  
apparatus comprising:

program management means for managing a database that  
stores program information for broadcast programs;

transmission means for transmitting the program  
information stored in the database to an electronic  
apparatus using wireless communication; and

control means for controlling, under the control of  
said electronic apparatus, an apparatus having functions of  
recording and playing broadcast programs.

[Claim 2] A broadcast program recording and playing  
apparatus according to Claim 1, wherein said electronic  
apparatus is a portable terminal.

[Claim 3] A broadcast program recording and playing  
apparatus according to Claim 2, wherein said portable  
terminal is a private apparatus.

[Claim 4] A broadcast program recording and playing  
apparatus according to Claim 1, wherein the apparatus having  
functions of recording and playing broadcast programs is an  
audio apparatus or a video apparatus.

[Claim 5] A broadcast program recording and playing apparatus according to Claim 1, wherein the wireless communication is based on a spread spectrum communication system.

[Claim 6] A broadcast program recording and playing apparatus according to Claim 1, wherein the wireless communication with said electronic apparatus is switched between communication using a public circuit and short-distance wireless communication.

[Claim 7] A broadcast program recording and playing apparatus according to Claim 6, wherein the short-distance wireless communication is based on the Bluetooth system.

[Claim 8] A broadcast program recording and playing apparatus according to Claim 6, wherein the short-distance wireless communication is based on an infrared data communication system.

[Claim 9] A portable terminal for recording and playing broadcast programs, comprising:

transmission means for transmitting program information stored in a database that stores the program information for broadcast programs to an electronic apparatus using wireless communication;

display means for displaying the program information obtained using said transmission means; and

command transmission means for transmitting a command

that controls an apparatus having functions of recording and playing broadcast programs to a server that controls recording and playing performed by the apparatus.

[Claim 10] A portable terminal for recording and playing broadcast programs according to Claim 9, wherein said electronic apparatus is the portable terminal.

[Claim 11] A portable terminal for recording and playing broadcast programs according to Claim 10, wherein the portable terminal is a private apparatus.

[Claim 12] A portable terminal for recording and playing broadcast programs according to Claim 9, wherein the apparatus having functions of recording and playing broadcast programs is an audio apparatus or a video apparatus.

[Claim 13] A portable terminal for recording and playing broadcast programs according to Claim 9, wherein the wireless communication is based on a spread spectrum communication system.

[Claim 14] A portable terminal for recording and playing broadcast programs according to Claim 9, wherein the wireless communication with said electronic apparatus is switched between communication using a public circuit and short-distance wireless communication.

[Claim 15] A portable terminal for recording and playing broadcast programs according to Claim 14, wherein the short-

distance wireless communication is based on the Bluetooth system.

[Claim 16] A portable terminal for recording and playing broadcast programs according to Claim 14, wherein the short-distance wireless communication is based on an infrared data communication system.

[Detailed Description of the Invention]

[0001]

[Technical Field of the Invention]

The present invention relates to broadcast program recording and playing apparatuses and to portable terminals for recording and playing broadcast programs. More particularly, the present invention relates to a broadcast program recording and playing apparatus and to a portable terminal for recording and playing broadcast programs in which, on the premise that program information transmitted by the Internet or digital broadcasting is stored beforehand in a database and hence the program information is extractable, the program information is displayed on the portable terminal for each individual, and an AV apparatus is controlled in accordance with the displayed information, thereby selectively playing and programming program recording by selecting the title of a program.

[0002]

[Description of the Related Art]

An environment in which program recording can be set up using an electronic program guide on the Internet has been developed. For example, an iEPG (internet electronic program guide) system is proposed by the same applicant as the present invention. The iEPG system is developed for a system (recording system, the trade name: Giga Pocket) which sets up program recording using a program guide site on the Internet. The iEPG system is offered as an Internet TV guide. In this recording system, a user selects, from a list of programs, a recording button of a program that the user wants to set up for recording, thereby downloading a text file in which the broadcast station name, program title, start time, and end time are described. In this recording system, program recording is set up based on various downloaded data. As a result, recordings can be set up only by on-screen operations on the Web.

[0003]

Also, there are other products, such as a personal television "Replay TV" and a PVR (personal video recorder) as typified by TiVo, Inc., which can automatically set up recordings using program information based on personal preferences. What Replay TV offers is one service referred to as personal television. Using Replay TV, a user can record a currently-broadcast television program to an HDD (hard disk device) in real time, and, while watching the



program, the user can pause and rewind the program. Also, the user can get a program guide and select favorite programs according to actor, theme, and the like. Hence, the user can collect favorite programs into a personal channel on the HDD.

[0004]

Although the service offered by PVRs is similar to that using VCRs (video tape recorders), PVRs are advantageous to VCRs in that PVRs can record programs for hours using a large-capacity hard disk instead of a tape. Since real-time program recording can be performed by a PVR, a PVR user can skip commercials and enjoy the program using pause and rewind functions. Also, the PVR user can select dozens of programs to set up for recording.

[0005]

[Problems to be Solved by the Invention]

Although the above-described service based on the Internet TV guide only enables a user to set up recordings and to download program information, the service does not enable the user to extract program information based on user's personal preferences. In light of extraction of program information based on the user's personal preferences, conventional recordings by VCRs and the above-described recordings based on the Internet TV guide only differ in that the former uses a remote control and that the latter

uses a personal computer (PC) to set up recording. In essence, neither recording system can set up recordings unless the user intends to set up recordings. In the future era of digital broadcasting and multiple channels, there is a problem in that the user may miss more and more programs unless careful attention is given to program information.

[0006]

Although the service using Replay TV and PVRs enables each user to set up recordings based on the user's personal preferences, there is a problem in that the centralized management of a plurality of individuals' program information cannot be performed because each apparatus is independent.

[0007]

Accordingly, it is an object of the present invention to provide, on the premise that broadcast programs and information for the broadcast programs transmitted by the Internet or digital broadcasting are stored beforehand in a predetermined storage medium and hence the program information is extractable, technology to easily select desired broadcast program information based on broadcast program information in accordance with personal preferences, to play and set up recordings of desired programs, and to perform the centralized management of a plurality of individuals' personal broadcast program information.

[0008]

[Means for Solving the Problems]

In order to achieve the foregoing objects, a broadcast program recording and playing apparatus and a portable terminal for recording and playing broadcast programs according to the present invention have the following structure.

[0009]

(1) A broadcast program recording and playing apparatus including program management means for managing a database that stores program information for broadcast programs; transmission means for transmitting the program information stored in the database to an electronic apparatus using wireless communication; and control means for controlling, under the control of the electronic apparatus, an apparatus having functions of recording and playing broadcast programs.

(2) A broadcast program recording and playing apparatus as set forth in (1), wherein the electronic apparatus is a portable terminal.

(3) A broadcast program recording and playing apparatus as set forth in (2), wherein the portable terminal is a private apparatus.

(4) A broadcast program recording and playing apparatus as set forth in (1), wherein the apparatus having

functions of recording and playing broadcast programs is an audio apparatus or a video apparatus.

(5) A broadcast program recording and playing apparatus as set forth in (1), wherein the wireless communication is based on a spread spectrum communication system.

(6) A broadcast program recording and playing apparatus as set forth in (1), wherein the wireless communication with the electronic apparatus is switched between communication using a public circuit and short-distance wireless communication.

(7) A broadcast program recording and playing apparatus as set forth in (6), wherein the short-distance wireless communication is based on the Bluetooth system.

(8) A broadcast program recording and playing apparatus as set forth in (6), wherein the short-distance wireless communication is based on an infrared data communication system.

[0010]

(9) A portable terminal for recording and playing broadcast programs, including transmission means for transmitting program information stored in a database that stores the program information for broadcast programs to an electronic apparatus using wireless communication; display means for displaying the program information obtained using

the transmission means; and command transmission means for transmitting a command that controls an apparatus having functions of recording and playing broadcast programs to a server that controls recording and playing performed by the apparatus.

(10) A portable terminal for recording and playing broadcast programs as set forth in (9), wherein the electronic apparatus is the portable terminal.

(11) A portable terminal for recording and playing broadcast programs as set forth in (10), wherein the portable terminal is a private apparatus.

(12) A portable terminal for recording and playing broadcast programs as set forth in (9), wherein the apparatus having functions of recording and playing broadcast programs is an audio apparatus or a video apparatus.

(13) A portable terminal for recording and playing broadcast programs as set forth in (9), wherein the wireless communication is based on a spread spectrum communication system.

(14) A portable terminal for recording and playing broadcast programs as set forth in (9), wherein the wireless communication with the electronic apparatus is switched between communication using a public circuit and short-distance wireless communication.

(15) A portable terminal for recording and playing broadcast programs as set forth in (14), wherein the short-distance wireless communication is based on the Bluetooth system.

(16) A portable terminal for recording and playing broadcast programs as set forth in (14), wherein the short-distance wireless communication is based on an infrared data communication system.

[0011]

According to the present invention, on the premise that program information transmitted by the Internet or digital broadcasting is stored beforehand in a database and hence the program information is extractable, the program information is displayed on a portable terminal, such as a cellular phone or a PDA (Personal Data Assistance), for each individual, and hence an AV apparatus is controlled in accordance with the displayed information. By simply selecting the program title, it is possible to play a program regardless of the storage location of the program. It is also possible to set up recording of a program by selecting the program title, and hence it becomes unnecessary to perform complicated operation of the apparatus. Furthermore, it is possible to set up recording of a program from indoors or from outside by installing a device that can establish a wireless link with a cellular

phone or a PDA which can establish a link with a public circuit using wireless communication or short-distance wireless communication such as Bluetooth, wireless LAN, and infrared data communication (IrDA).

[0012]

[Description of the Embodiments]

A broadcast program recording and playing apparatus and a portable terminal for recording and playing broadcast programs according to embodiments of the present invention are described with reference to the drawings.

[0013]

A device configuration diagram shown in Fig. 1 illustrates a home server 100 which includes a database for storing broadcast program information; portable terminals 200 which receive the broadcast program information stored in the database using wireless communication; and home appliances 300 which have functions of recording and playing broadcast programs. For example, the home appliances 300 include a Tuner 301, an HDD 302, a VCR 303, a TV 304, and the like.

[0014]

The home server 100 includes program management means for managing the database that stores program information for broadcast programs. The home server 100 also includes a hard disk 110 that obtains and stores broadcast program

information from the Internet and digital broadcasting; extraction means (not shown) that extracts desired broadcast program information from the obtained broadcast program information; communication means (not shown) that communicates data with the portable terminals 200 through a network 400 such as a wireless access network; communication means (not shown) that communicates data with the portable terminals 200 using a short-distance wireless communication system such as Bluetooth, infrared data communication, and the like; a selector SW (not shown) for switching between the two communication means; and control means (not shown) that controls the home appliances 300 which are connected thereto by a daisy-chain or a bus.

[0015]

The portable terminals 200 are electronic apparatuses that can receive program information stored in the database of the home server 100 by transmission means using wireless communication. The portable terminals 200 each include communication means for communicating data with the home server 100 through the network 400 such as the wireless access network; communication means for communicating data with the home server 100 using the short-distance wireless communication system such as Bluetooth, infrared data communication, and the like; a selector SW for switching between the two communication means; means for extracting



individual broadcast program information from the home server 100 and displaying the extracted broadcast program information; and selection means for selecting the extracted broadcast program information.

[0016]

As shown in Fig. 2, the specific structure of the portable terminal 200 includes a CPU 210 that controls each section of the portable terminal 200; a ROM 220 that stores a program for the CPU 210; a memory 230 in which the program and data are expanded; a liquid crystal display (LCD) 240 for displaying data; a display controller 250 that controls the LCD 240; an operation SW 270 for selecting displayed data and controlling the home appliances 300 (see Fig. 1); a wireless communication unit 280 for communicating with the home server 100 (see Fig. 1) indoors and outside; and an I/O controller 260 that controls the operation SW 270 and the wireless communication unit 280.

[0017]

The wireless communication unit 280 has a function of appropriately switching between communication using a public circuit based on a spread spectrum communication system and short-distance wireless communication based on the spread spectrum communication system. The wireless communication unit 280 includes a wireless transmitting section shown in Fig. 3 and a wireless receiving section shown in Fig. 4.

[0018]

The wireless transmitting section shown in Fig. 3 includes a DS (Direct Spectrum) transmitter 281 that transmits data through the network 400 using the spread spectrum communication system; an FH (Frequency Hopping) transmitter 282 that transmits data using short-distance wireless communication based on the spread spectrum communication system; a switch SW 283 that switches between the DS transmitter 281 and the FH transmitter 282; and a controller 284 that controls the DS transmitter 281 and the FH transmitter 282.

[0019]

The DS transmitter 281 is a transmitter for communicating, from the outside, with the home server 100 through the network 400 such as the wireless access network, which is the public circuit. The DS transmitter 281 includes a baseband circuit 281a that processes data using a spread spectrum system (DS: direct spreading); an IF-BB modulator-demodulator 281b that converts a baseband signal obtained by the baseband circuit 281a into an intermediate frequency; an IF-RF modulator-demodulator 281c that converts the intermediate frequency into a radio frequency; a Power AMP 281d that amplifies the RF data (signal) so that it transmits a signal at predetermined power; and a transmission antenna 281e.

[0020]

The FH transmitter 282 is a short-distance wireless transmitter that communicates information with the home server 100, particularly indoors. The FH transmitter 282 includes a baseband circuit 282a that processes data using a spread spectrum system (FH: frequency hopping); an IF-BB modulator-demodulator 282b that converts a baseband signal obtained by the baseband circuit 282a into an intermediate frequency; an IF-RF modulator-demodulator 282c that converts the intermediate frequency into a radio frequency; and a transmission antenna 282d.

[0021]

The wireless receiving section shown in Fig. 4 includes a DS (Direct Spectrum) receiver 285 that receives data (signal) that has undergone spread spectrum processing via the network 400; an FH (Frequency Hopping) receiver 286 that receives data (signal) using short-distance wireless communication based on the spread spectrum communication system; a switch SW 287 that switches between the DS receiver 285 and the FH receiver 286; and a controller 288 that controls the DS receiver 285 and the FH receiver 286.

[0022]

The DS receiver 285 is a receiver that communicates, from the outside, information with the home server 100 through the network 400 such as the wireless access network,

which is the public circuit. The DS receiver 285 includes a reception antenna 285e that receives data (signal) such as program information from the home server 100; an LNA (low noise amplifier) 285d that amplifies the received data (signal) such as the program information; an IF-RF modulator-demodulator 285c that converts a signal from the LNA 285d from a radio frequency into an intermediate frequency; an IF-BB modulator-demodulator 285b that converts the intermediate frequency signal into a baseband signal; and a baseband circuit 285a that demodulates (de-spreads) the baseband signal.

[0023]

The FH receiver 286 is a short-distance wireless receiver that communicates information with the home server 100 indoors. The FH receiver 286 includes a reception antenna 286e that receives data (signal) such as program information from the home server 100; an LNA (low noise amplifier) 286d that amplifies the received data (signal) such as the program information; an IF-RF modulator-demodulator 286c that converts a signal from the LNA 286d from a radio frequency into an intermediate frequency; an IF-BB modulator-demodulator 286b that converts the intermediate frequency signal into a baseband signal; and a baseband circuit 286a that demodulates (de-spreads) the baseband signal.

[0024]

As shown in Fig. 1, the home appliances 300 include the Tuner 301 that receives broadcast programs such as digital broadcast programs and the like; the HDD (hard disk device) 302 that records and stores data for the broadcast programs and the like; the VCR (video cassette recorder) 303 that records and plays broadcast programs; and the TV (television receiver) 304 that displays received or recorded broadcast programs. The home appliances 300 are connected to the home server 100 by a daisy-chain or a bus. The home appliances 300 are controlled by the portable terminal 200 through the home server 100.

[0025]

In the system which includes the above-described apparatuses, the portable terminals, which are electronic apparatuses, operate indoors the home appliances, which are apparatuses having functions of recording and playing broadcast programs. This case will be described with reference to the drawings.

[0026]

The system shown in Fig. 5 includes the home server 100 shown in Fig. 1, the portable terminals 200 shown in Fig. 2, and the home appliances 300 (HDD 302, VCR 303, and TV 304). The home appliances 300 are connected to the home server 100.

[0027]

Broadcast program information is extracted in accordance with personal preferences from broadcast program information obtained from a network such as the Internet, and the extracted information is stored in a recording storage medium, such as the hard disk 110 (not shown) in the home server 100. The home appliances 300 (VCR 303 and the like) can record broadcast programs and receive desired broadcast programs from a server (not shown) that stores broadcast programs.

[0028]

Based on Fig. 6, data communication between the home server 100 and the portable terminal 200 is schematically described.

[0029]

The home server 100 is always waiting for the portable terminal 200 to establish a link (step ST110). When a user operates the operation switch or the like, the portable terminal 200 transmits, from indoors or from outside, a request to establish a link with the home server 100. The home server 100 determines whether the link request from the portable terminal 200 is transmitted from indoors or from outside and operates so as to establish a link with the portable terminal 200 (steps ST120 and ST130). When the portable terminal 200 tries to establish a link from the outside using a public circuit, or when the link status

between the portable terminal 200 and the home server 100 becomes unstable due to its environment or the like, a link may not be established. In such a case, information currently stored in a memory of the portable terminal 200 or an error message indicating that link establishment failed is displayed, and the home server 100 starts operating the portable terminal 200 (steps ST140 and ST150).

[0030]

In the case of short-distance wireless communication (step ST120), the home server 100 establishes a link with the portable terminal 200 and transmits the user's most recent individual broadcast program information stored in the recording storage medium to the portable terminal 200 (steps ST160 and ST170). The LCD 240 of the portable terminal 200 displays the broadcast program information transmitted from the home server 100 (step ST180). The user operates the operation switch 270 of the portable terminal 200 to select desired broadcast program information (step ST190).

[0031]

In the case of communication using a public circuit (step ST130), the home server 100 establishes a link with the portable terminal 200 and transmits the user's most recent individual broadcast program information stored in the recording storage medium to the portable terminal 200

(steps ST200 and ST210). The LCD 240 of the portable terminal 200 displays the broadcast program information transmitted from the home server 100 (step ST220). The user operates the operation switch 270 of the portable terminal 200 to select the desired broadcast program information (step ST230).

[0032]

In this manner, under the control of the portable terminal 200, the home server 100 and the portable terminal 200 can play or set up recording of a desired broadcast program.

[0033]

Based on the structure shown in Fig. 5 and with reference to communication procedures (protocol) shown in Fig. 7, a case in which the portable terminal 200 establishes, from indoors, a link with the home server 100 and selects and plays the desired broadcast program information (content) is described.

[0034]

The portable terminal 200 establishes a link with the home server 100, obtains individual broadcast program information, and selects desired broadcast program information. As shown in Fig. 7(A), concerning the operation performed between the portable terminal 200 and the home server 100, the home server 100 is always waiting



for the portable terminal 200 to establish a link therewith. A user selects indoors/outside using the operation SW 270 of the portable terminal 200. In Fig. 5, the operation is switched to short-distance wireless communication, and a link request (HELLO) is transmitted to the home server 100. When the home server 100 receives the link request, the home server 100 performs link establishment processing and transmits a response to the portable terminal 200. The portable terminal 200 confirms the link establishment and transmits a confirmation signal to the home server 100. The home server 100 acknowledges that the portable terminal 200 has confirmed the link establishment. Accordingly, the link for performing mutual data communication is established.

[0035]

When the mutual link is established, the portable terminal 200 requests individual broadcast program information stored in the home server 100. In response to the request, the home server 100 transmits data for the individual broadcast program information stored in the recording storage medium to the portable terminal 200. The portable terminal 200 in turn confirms that reception of the entire broadcast program information is completed and transmits a confirmation signal to the home server 100. The home server 100 acknowledges the confirmation signal from the portable terminal 200. Accordingly, the portable

terminal 200 obtains the individual broadcast program information stored in the home server 100.

[0036]

Having obtained the individual broadcast program information, the portable terminal 200 causes the LCD 240 to display the titles of broadcast programs and the like. The user operates the operation SW 270 to select desired broadcast program information (content) (see Fig. 5). Selection information for the broadcast program information selected by the user is transmitted to the home server 100. The home server 100 receives the selection information for the selected broadcast program information and transmits a confirmation response to the portable terminal 200. The portable terminal 200 receives the response from the home server 100 and confirms that the selection of the broadcast program information is completed.

[0037]

When the selection of the broadcast program information is completed, the portable terminal 200 terminates the link with the home server 100. When the operation SW 270 is not operated for a predetermined period of time, the portable terminal 200 transmits a link terminating signal to the home server 100. When the home server 100 receives the link terminating signal, the home server 100 terminates the link and transmits a response to the portable terminal 200. The

portable terminal 200 confirms that the link is terminated and transmits a confirmation signal to the home server 100. The home server receives the confirmation signal and acknowledges that the link with the portable terminal 200 is terminated. Accordingly, data communication between the home server 100 and the portable terminal 200 is terminated.

[0038]

Based on the selected broadcast program information, the home server 100 determines whether the selected information indicates an already recorded broadcast program or a broadcast program yet to be recorded. Then, the home server 100 selects an appropriate apparatus from among the home appliances 300 and gives an instruction to the selected apparatus. For example, as shown in Fig. 7(B), when the selected broadcast program information indicates a broadcast program that is already recorded by the VCR 303, the home server 100 transmits an activation request to the VCR 303 to play a predetermined broadcast program. The VCR 303 receives the activation request from the home server 100 and transmits an acceptance (or refusal) signal in response to the activation request to the home server 100. The home server 100 confirms that the request has been accepted (or refused) based on the signal from the VCR 303. The home server 100 transmits information and designates the start position of a tape inserted in the VCR 303 at which a

desired broadcast program is recorded. In response to the designation (playback start position or the like) from the home server 100, the VCR 303 prepares for playing in accordance with the designation and transmits an acknowledgement to the home server 100. The home server 100 confirms the acknowledgement from the VCR 303. Accordingly, the VCR 303 is ready to play the program.

[0039]

Subsequently, the home server 100 requests the TV 304 for displaying images from the VCR 303 to switch input so that the TV 304 can play signals from the VCR 303. The TV 304 receives the input switching request and transmits an acceptance signal to the home server 100. The home server 100 in turn confirms the acceptance from the TV 304. In response to an instruction from the home server 100, the VCR 303 starts playing the desired broadcast program, and the TV 304 projects images of the desired broadcast program.

[0040]

#### [Advantages]

As described above, a home server stores individual's broadcast program information and controls all of the home appliances connected thereto. A user only needs to use a portable terminal to call-up broadcast program information stored in a database and to select desired broadcast program information. It thus becomes unnecessary to perform

complicated setting of AV apparatuses which perform playing and recording of broadcast programs. The portable terminal can operate the AV apparatuses remotely using wireless communication. Also, the portable terminal can establish a link with the home server from the outside through a network such as a public circuit and can gain access to the home server. As a result, the portable terminal can set up recordings regardless of the location of the portable terminal. The home server performs centralized management of individuals' broadcast program information. If necessary, program information in accordance with personal preferences is displayed for each individual (each portable terminal). Unnecessary information is not displayed, and hence desired information can be selected efficiently. As a result, the power consumption of the portable terminal is reduced.

[Brief Description of the Drawings]

[Fig. 1]

Fig. 1 is a schematic diagram of the overall structure of a broadcast program recording and playing apparatus according to the present invention.

[Fig. 2]

Fig. 2 is a block diagram of the structure of a portable terminal for recording and playing broadcast programs according to the present invention.

[Fig. 3]

Fig. 3 is a block diagram of the structure of a transmitting section of a wireless communication unit of the portable terminal for recording and playing broadcast programs according to the present invention.

[Fig. 4]

Fig. 4 is a block diagram of the structure of a receiving section of the wireless communication unit of the portable terminal for recording and playing broadcast programs according to the present invention.

[Fig. 5]

Fig. 5 illustrates a case in which home appliances are controlled by selecting broadcast program information from indoors or from outside by the broadcast program recording and playing apparatus using the portable terminal for recording and playing broadcast programs according to the present invention.

[Fig. 6]

Fig. 6 is a flowchart showing a communication procedure performed between the portable terminal according to the present invention and a home server.

[Fig. 7]

Fig. 7 illustrates the communication procedure between the portable terminal according to the present invention and the home server and that between the home server and home appliances (VCR and TV).

[Reference Numerals]

100: home server, 110: hard disk, 200: portable terminal, 300: home appliances, 301: tuner, 302: hard disk, 303: VCR, 304: TV, 400: network, 210: CPU, 220: ROM, 230: memory, 240: liquid crystal display (LCD), 250: display controller, 260: I/O controller, 270: operation SW, 280: wireless communication unit, 281: DS transmitter, 281a: baseband unit, 281b: IF-BB modulator-demodulator, 281c: IF-RF modulator, 281d: power AMP, 281e: antenna, 282: FH transmitter, 282a: baseband unit, 282b: IF-BB modulator-demodulator, 282c: IF-RF modulator, 281d: antenna, 283: SW, 284: controller, 285: DS receiver, 285a: baseband unit, 285b: IF-BB modulator-demodulator, 285c: IF-RF modulator, 285d: LNA, 285e: antenna, 286: FH receiver, 286a: baseband unit, 286b: IF-BB modulator-demodulator, 286c: IF-RF modulator, 286d: LNA, 286e: antenna, 287: SW, 288: controller

[Name of Document]        ABSTRACT

[Abstract]

[Object]    To provide a broadcast program recording and playing apparatus capable of selectively playing and programming program recording by easily selecting desired broadcast program information based on broadcast program information in accordance with personal preferences and to perform the centralized management of a plurality of individuals' personal program information.

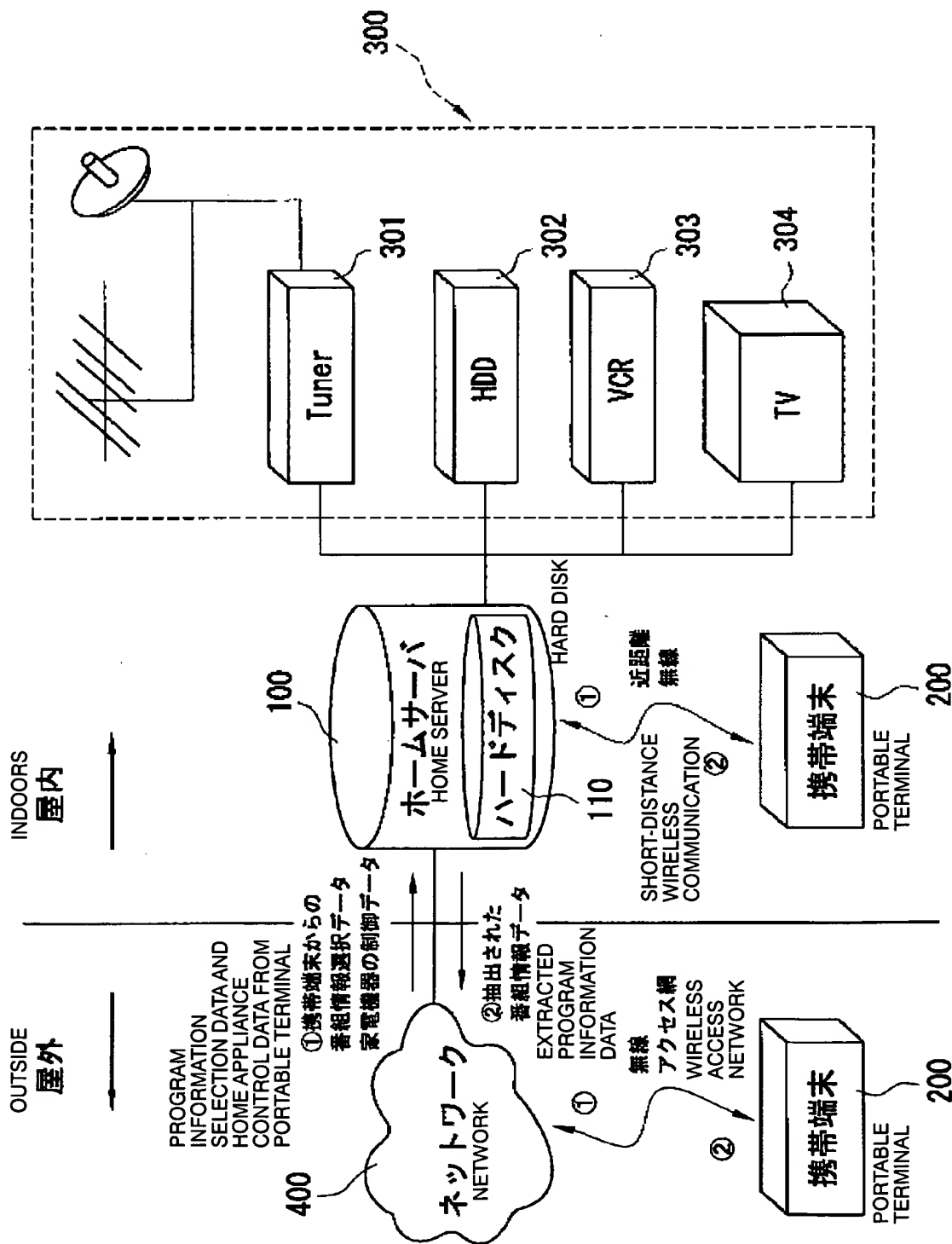
[Solving Means]    A broadcast program recording and playing apparatus includes program management means that manages a database storing program information for broadcast programs; transmission means for transmitting the program information stored in the database to an electronic apparatus using wireless communication; and control means for controlling, under the control of the electronic apparatus, an apparatus having functions of recording and playing broadcast programs.

[Selected Figure]        Fig. 1

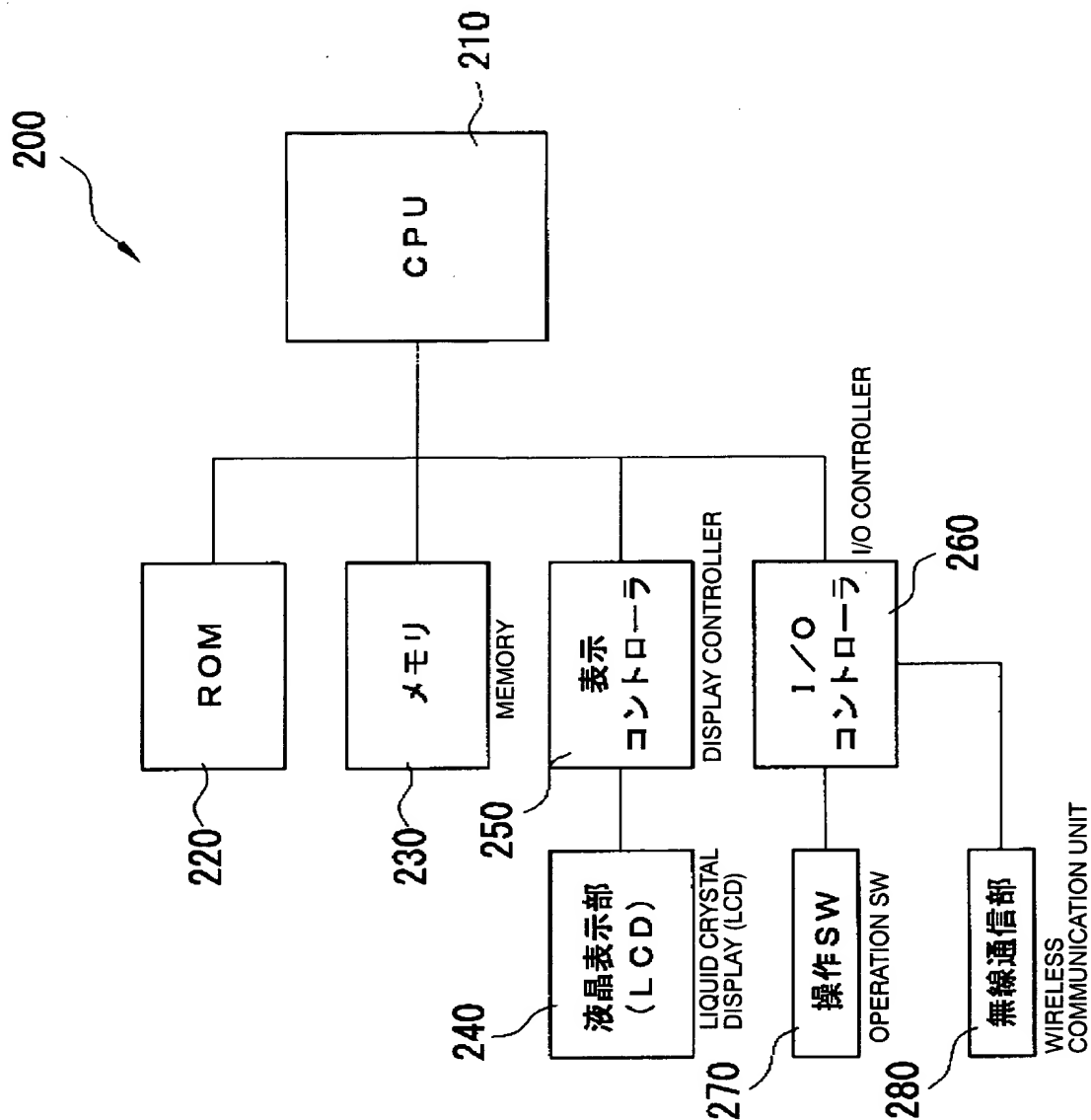


【書類名】 図面 [Name of Document] DRAWINGS

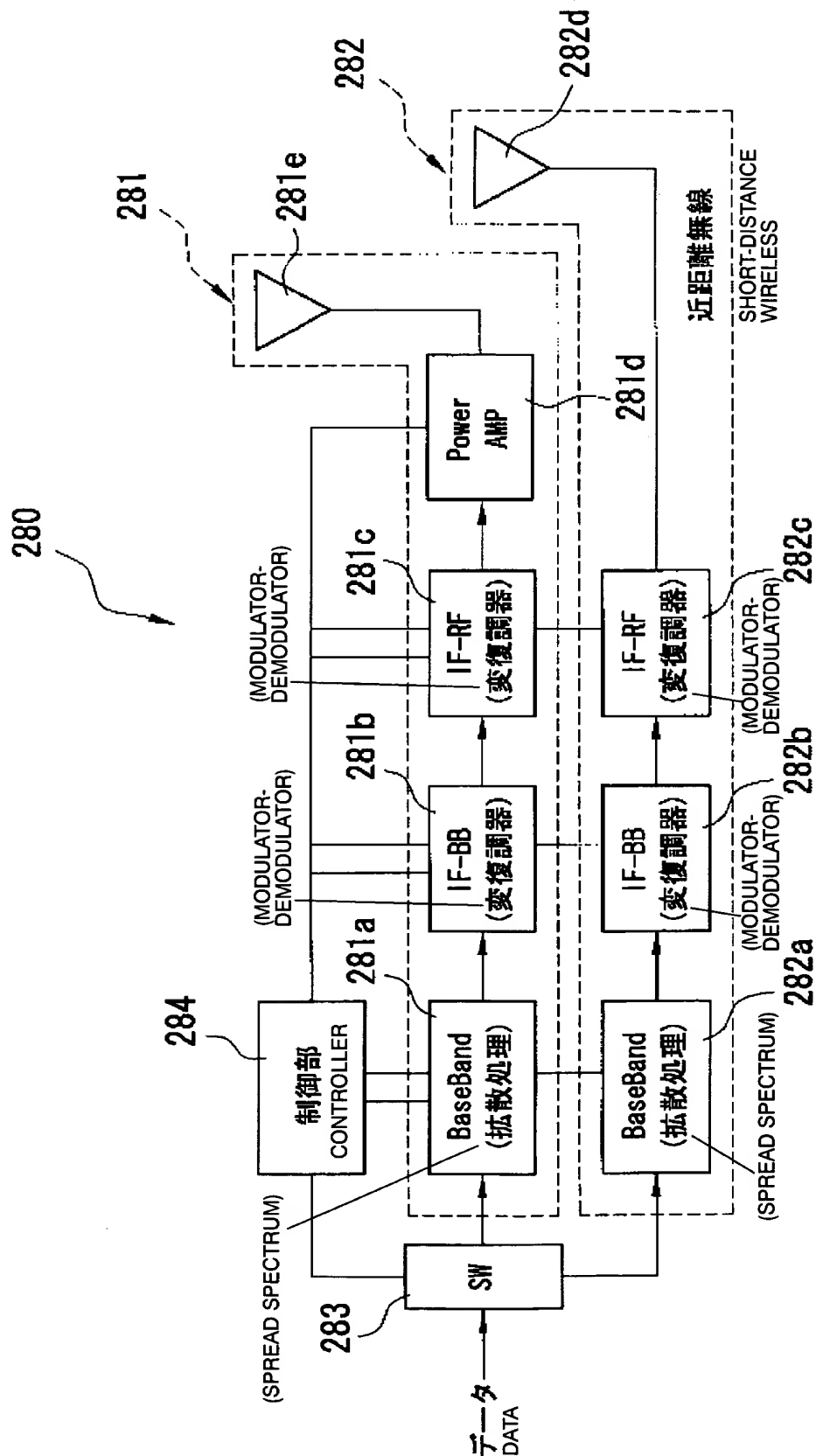
【図1】 [FIG. 1]



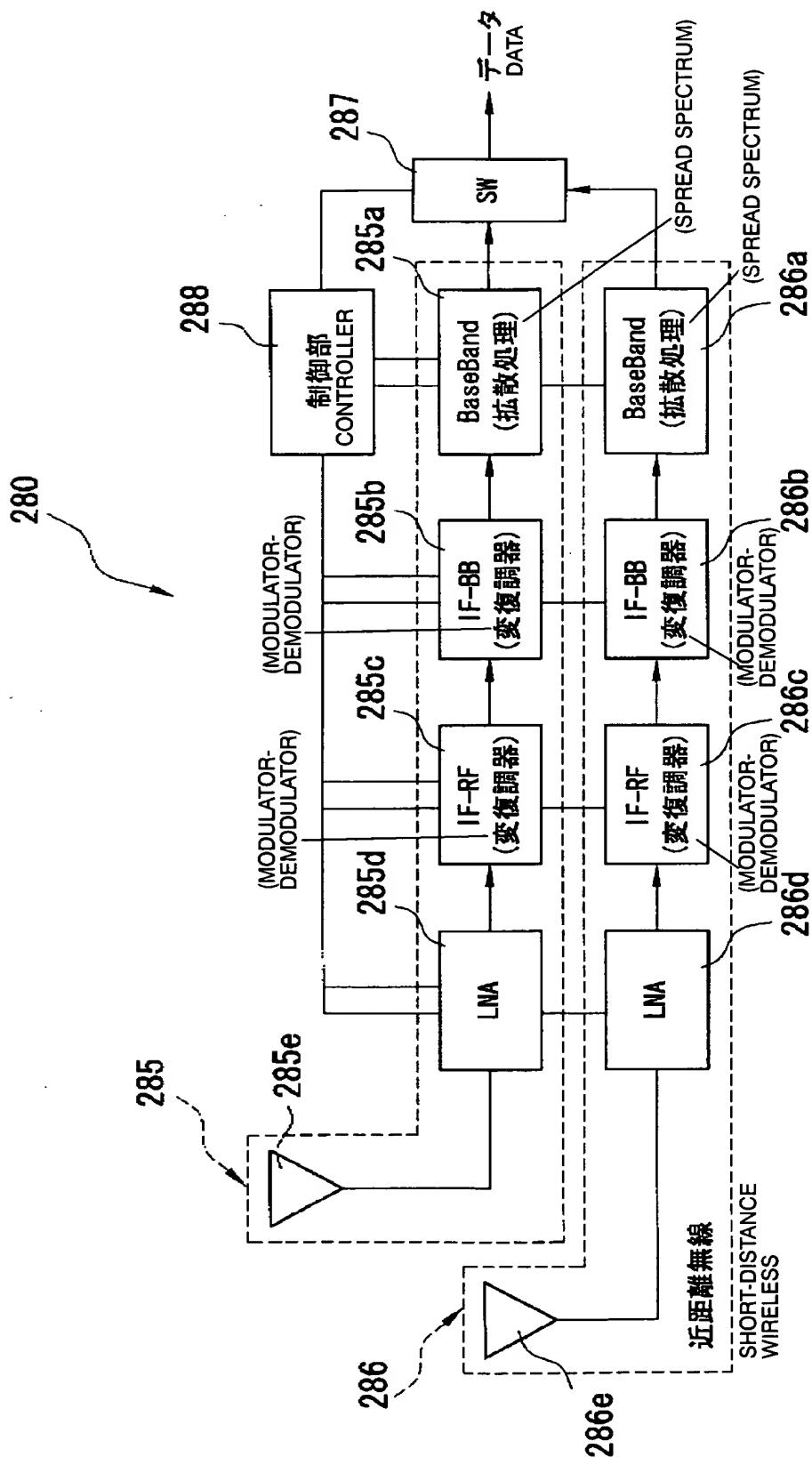
【図2】 [FIG. 2]



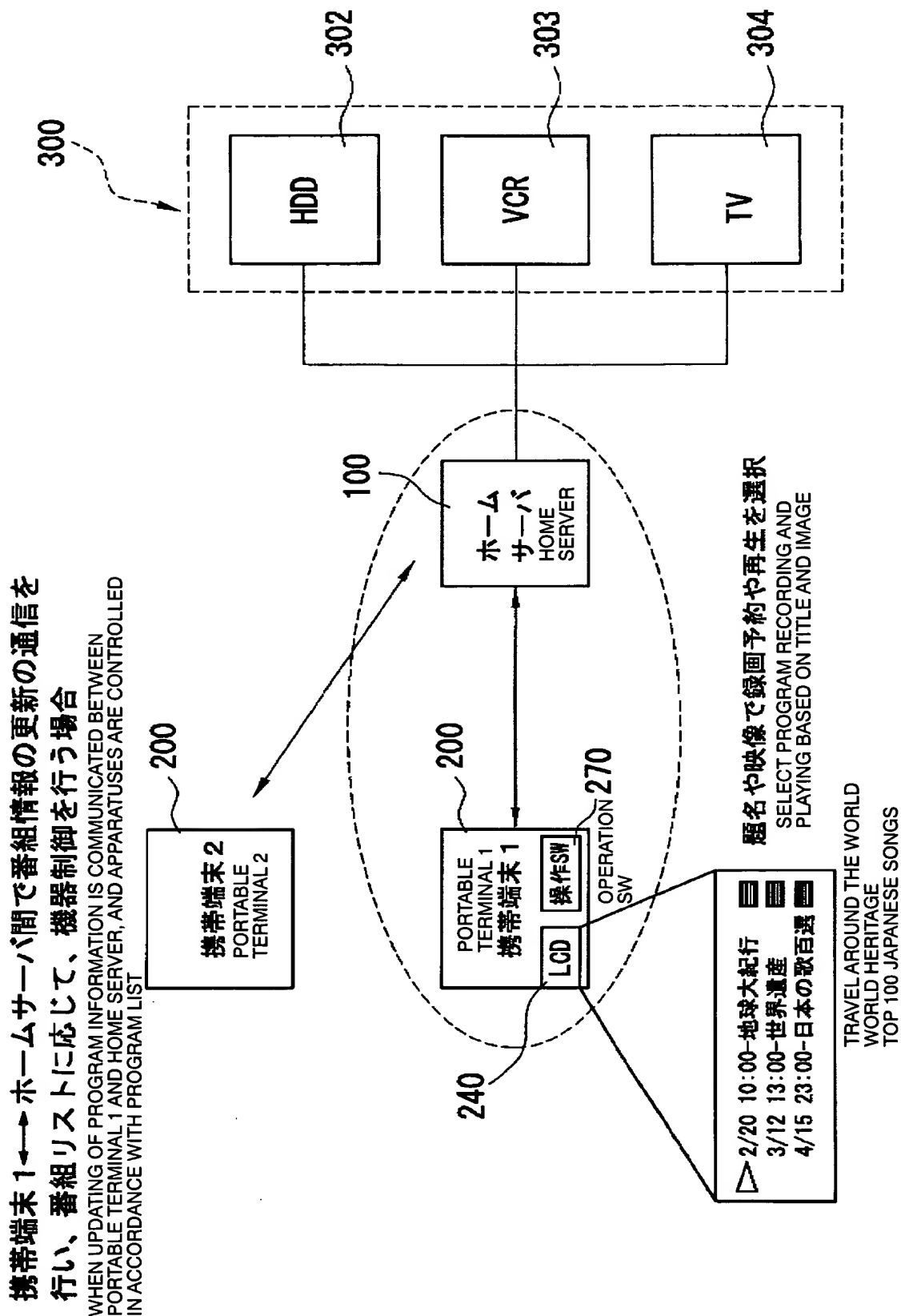
【図3】 [FIG. 3]



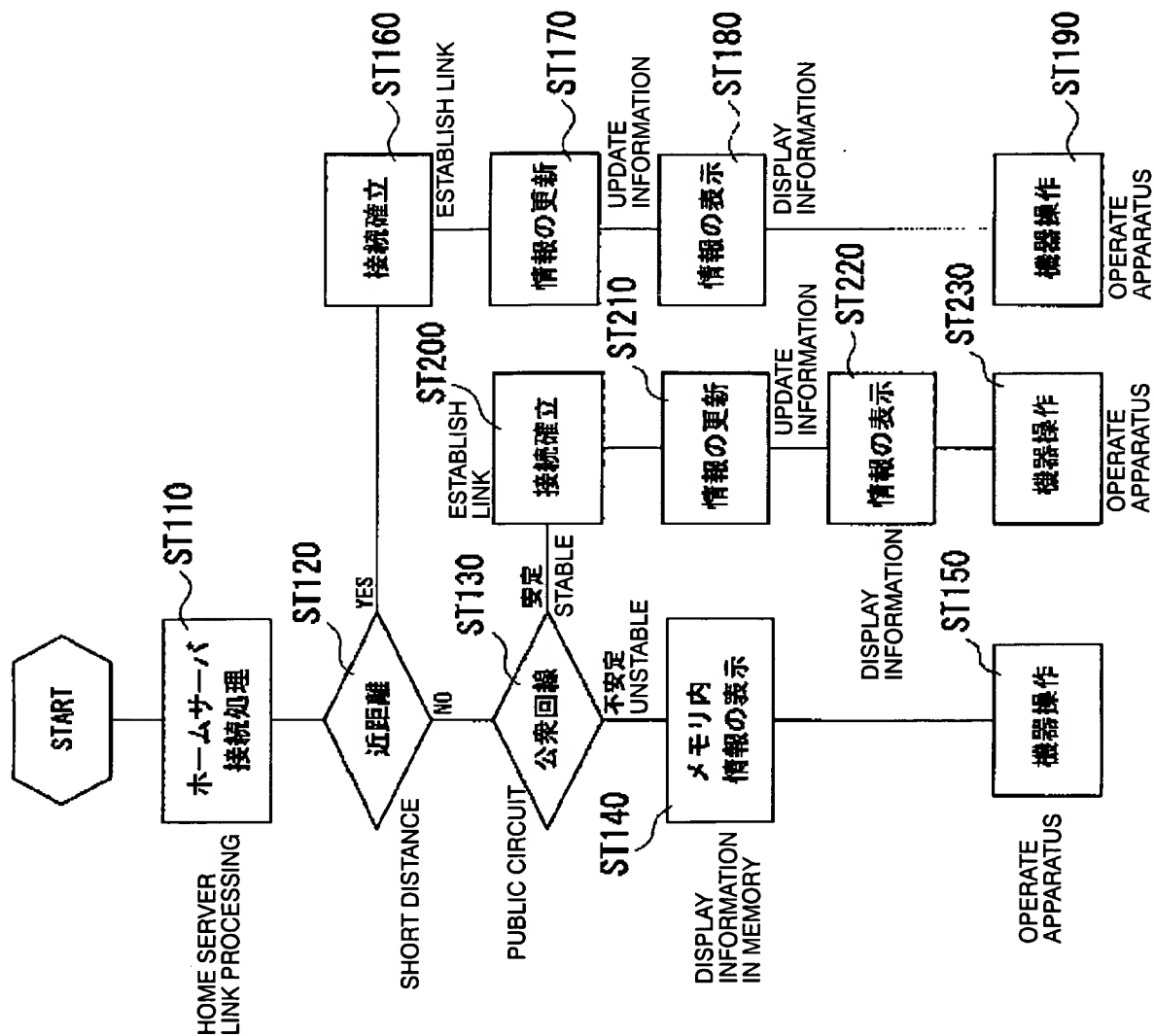
【図4】 [FIG. 4]



【図5】 [FIG. 5]



【図6】 [FIG. 6]



【図7】 [FIG 7]

